

**Supplementary Table 2.** Metabolomics profile of controls and patients with non-secreting adrenocortical adenomas, autonomous cortisol secretion, and Cushing's syndrome after age adjustment.

		Controls	Non secreting adenomas	Autonomous cortisol secretion	Cushing's syndrome	P value <sup>a</sup>
<b>Carnitine and acylcarnitines</b>						
	<b>DL-Carnitine (C0)</b>	<b>1.146 (1.042 - 1.259)</b>	<b>1.143 (1.028 - 1.274)</b>	<b>0.977 (0.877 - 1.089)<sup>b</sup></b>	<b>0.962 (0.889 - 1.04)<sup>b</sup></b>	<b>0.006<sup>*</sup></b>
	Decanoyl-L-carnitine (C10)	2.104 (1.824 - 2.427)	1.862 (1.585 - 2.188)	1.567 (1.334 - 1.845)	1.963 (1.746 - 2.208)	0.089
	<b>Decenoyl-L-carnitine (C10:1)</b>	<b>1.25 (1.091 - 1.435)</b>	<b>1.072 (0.916 - 1.25)</b>	<b>0.887 (0.759 - 1.038)<sup>b</sup></b>	<b>1.151 (1.028 - 1.288)</b>	<b>0.024<sup>*</sup></b>
	Decadienoyl-L-carnitine (C10:2)	1.072 (0.986 - 1.161)	1.112 (1.012 - 1.219)	1.002 (0.914 - 1.102)	1.054 (0.984 - 1.127)	0.462
	<b>Dodecanoyl-L-carnitine (Lauroylcarnitine) (C12)</b>	<b>1.734 (1.514 - 1.986)</b>	<b>1.483 (1.268 - 1.73)</b>	<b>1.25 (1.069 - 1.462)<sup>b</sup></b>	<b>1.455 (1.297 - 1.629)<sup>b</sup></b>	<b>0.042</b>
	Dodecanedioyl-L-carnitine (C12-DC)	0.951 (0.925 - 0.977)	0.962 (0.933 - 0.993)	0.971 (0.942 - 1.002)	0.955 (0.933 - 0.975)	0.776
	<b>Dodecenoyl-L-carnitine (C12:1)</b>	<b>2.061 (1.799 - 2.366)</b>	<b>1.574 (1.346 - 1.837)<sup>b</sup></b>	<b>1.396 (1.194 - 1.637)<sup>b</sup></b>	<b>1.6 (1.426 - 1.791)<sup>b</sup></b>	<b>0.006<sup>*</sup></b>
	<b>Tetradecanoyl-L-carnitine (Myristoylcarnitine) (C14)</b>	<b>2.148 (1.928 - 2.399)</b>	<b>1.845 (1.629 - 2.089)</b>	<b>1.592 (1.406 - 1.807)<sup>b</sup></b>	<b>1.91 (1.746 - 2.094)</b>	<b>0.016<sup>*</sup></b>
	<b>Tetradecenoyl-L-carnitine (C14:1)</b>	<b>2.679 (2.275 - 3.148)</b>	<b>2.123 (1.766 - 2.553)</b>	<b>1.758 (1.459 - 2.118)<sup>b</sup></b>	<b>2.07 (1.807 - 2.366)<sup>b</sup></b>	<b>0.019<sup>*</sup></b>
	<b>Hydroxytetradecenoyl-L-carnitine (C14:1-OH)</b>	<b>1.791 (1.596 - 2.004)</b>	<b>1.592 (1.396 - 1.811)</b>	<b>1.384 (1.213 - 1.578)</b>	<b>1.578 (1.435 - 1.734)</b>	<b>0.066</b>
	<b>Tetradecadien-L-carnitine (C14:2)</b>	<b>1.483 (1.25 - 1.762)</b>	<b>1.14 (0.938 - 1.384)</b>	<b>0.899 (0.74 - 1.094)<sup>b</sup></b>	<b>1.18 (1.026 - 1.361)<sup>b</sup></b>	<b>0.009<sup>*</sup></b>
	<b>Hydroxytetradecadien-L-carnitine (C14:2-OH)</b>	<b>1.34 (1.242 - 1.445)</b>	<b>1.256 (1.153 - 1.368)</b>	<b>1.112 (1.019 - 1.211)<sup>b</sup></b>	<b>1.202 (1.13 - 1.282)<sup>b</sup></b>	<b>0.021<sup>*</sup></b>
	Hexadecanoyl-L-carnitine (Palmitoylcarnitine) (C16)	1.786 (1.6 - 1.995)	1.656 (1.462 - 1.875)	1.479 (1.303 - 1.675)	1.795 (1.641 - 1.968)	0.099

Hydroxyhexadecanoyl-L-carnitine (C16-OH)	1.435 (1.297 - 1.589)	1.352 (1.205 - 1.517)	1.197 (1.064 - 1.343)	1.355 (1.245 - 1.472)	0.186
Hexadecenoyl-L-carnitine (C16:1)	1.641 (1.51 - 1.782)	1.51 (1.374 - 1.66)	1.422 (1.294 - 1.563)	1.57 (1.466 - 1.679)	0.224
Hydroxyhexadecenoyl-L-carnitine (C16:1-OH)	1.66 (1.496 - 1.841)	1.486 (1.321 - 1.671)	1.355 (1.202 - 1.524)	1.445 (1.327 - 1.574)	0.100
Hexadecadienyl-L-carnitine (C16:2)	1.419 (1.282 - 1.57)	1.309 (1.167 - 1.469)	1.183 (1.054 - 1.33)	1.324 (1.219 - 1.439)	0.203
Hydroxyhexadecadienyl-L-carnitine (C16:2-OH)	1.119 (1.054 - 1.189)	1.079 (1.007 - 1.156)	1.016 (0.948 - 1.089)	1.072 (1.021 - 1.127)	0.292
Octadecanoyl-L-carnitine (Stearoylcarnitine) (C18)	1.698 (1.503 - 1.919)	1.629 (1.419 - 1.871)	1.517 (1.318 - 1.746)	1.832 (1.656 - 2.028)	0.186
Octadecenoyl-L-carnitine (Oleylcarnitine) (C18:1)	2.014 (1.762 - 2.296)	1.807 (1.556 - 2.099)	1.648 (1.416 - 1.919)	2.042 (1.832 - 2.28)	0.143
Hydroxyoctadecenoyl-L-carnitine (C18:1-OH)	1.346 (1.242 - 1.462)	1.259 (1.148 - 1.38)	1.169 (1.064 - 1.282)	1.276 (1.191 - 1.365)	0.229
<b>Octadecadienyl-L-carnitine (Linoleylcarnitine) (C18:2)</b>	<b>1.045 (0.897 - 1.216)</b>	<b>0.873 (0.735 - 1.038)</b>	<b>0.778 (0.653 - 0.927)<sup>b</sup></b>	<b>1.104 (0.975 - 1.253)</b>	<b>0.012<sup>*</sup></b>
<b>Acetyl-L-carnitine (C2)</b>	<b>2.113 (1.807 - 2.472)</b>	<b>1.694 (1.419 - 2.028)</b>	<b>1.352 (1.13 - 1.618)<sup>b</sup></b>	<b>1.603 (1.409 - 1.828)<sup>b</sup></b>	<b>0.006<sup>*</sup></b>
Propionyl-L-carnitine (C3)	1.153 (1.014 - 1.312)	1.161 (1.005 - 1.346)	0.964 (0.832 - 1.117)	1.069 (0.962 - 1.189)	0.240
Hydroxypropionyl-L-carnitine (C3-OH)	0.968 (0.914 - 1.026)	1.014 (0.948 - 1.081)	0.931 (0.873 - 0.995)	1.009 (0.962 - 1.059)	0.158
Propenoyl-L-carnitine (C3:1)	0.959 (0.895 - 1.028)	0.977 (0.904 - 1.057)	0.931 (0.861 - 1.009)	0.946 (0.893 - 1)	0.828
Butyryl-L-carnitine (C4)	1.236 (1.04 - 1.469)	1.125 (0.925 - 1.368)	0.995 (0.817 - 1.213)	1.127 (0.977 - 1.3)	0.519
Hydroxybutyryl-L-carnitine (C4-OH [C3-DC])	0.887 (0.787 - 1)	0.726 (0.634 - 0.834)	0.705 (0.615 - 0.809)	0.78 (0.706 - 0.861)	0.107
Butenyl-L-carnitine (C4:1)	1.114 (1.035 - 1.199)	1.102 (1.012 - 1.197)	1.132 (1.04 - 1.233)	1.081 (1.019 - 1.151)	0.815
Valeryl-L-carnitine (C5)	1.186 (1.042 - 1.349)	1.102 (0.951 - 1.276)	0.946 (0.815 - 1.096)	0.998 (0.895 - 1.109)	0.099
Methylglutaryl-L-carnitine (C5-M-DC)	1.081 (1.014 - 1.151)	0.957 (0.891 - 1.028)	0.957 (0.889 - 1.028)	1.009 (0.957 - 1.064)	0.072
Methylmalonyl-L-carnitine	1.033 (0.979 - 1.089)	0.977 (0.923 - 1.038)	1.023 (0.964 - 1.086)	1.021 (0.977 - 1.064)	0.555

	(C5-OH [C3-DC-M])					
	Tiglyl-L-carnitine (C5:1)	1.002 (0.948 - 1.062)	0.938 (0.879 - 1)	0.931 (0.873 - 0.993)	0.962 (0.918 - 1.009)	0.391
	Glutaconyl-L-carnitine (C5:1-DC)	1.05 (0.959 - 1.148)	1.014 (0.916 - 1.122)	0.993 (0.895 - 1.102)	1.009 (0.938 - 1.086)	0.882
	Fumaryl-L-carnitine (C6 [C4:1-DC])	1.702 (1.521 - 1.905)	1.626 (1.432 - 1.845)	1.39 (1.222 - 1.578)	1.603 (1.459 - 1.758)	0.153
	<b>Glutaryl-L-carnitine (C5-DC [C6-OH])</b>	<b>1.306 (1.211 - 1.409)</b>	<b>1.114 (1.021 - 1.213)<sup>b</sup></b>	<b>1.117 (1.023 - 1.216)<sup>b</sup></b>	<b>1.25 (1.175 - 1.334)</b>	<b>0.023<sup>*</sup></b>
	Hexenoyl-L-carnitine (C6:1)	1 (0.951 - 1.052)	1.026 (0.968 - 1.086)	1.012 (0.955 - 1.072)	1.007 (0.966 - 1.05)	0.932
	Pimelyl-L-carnitine (C7-DC)	1.514 (1.349 - 1.698)	1.288 (1.13 - 1.469)	1.216 (1.067 - 1.387)	1.276 (1.159 - 1.403)	0.087
	<b>Octanoyl-L-carnitine (C8)</b>	<b>1.734 (1.517 - 1.982)</b>	<b>1.567 (1.346 - 1.824)</b>	<b>1.276 (1.096 - 1.489)<sup>b</sup></b>	<b>1.656 (1.483 - 1.849)</b>	<b>0.033</b>
	Nonayl-L-carnitine (C9)	1.888 (1.69 - 2.109)	1.56 (1.374 - 1.766)	1.528 (1.346 - 1.734)	1.683 (1.538 - 1.845)	0.098
<b>Amino acids and biogenic amines</b>						
	Alanine	0.916 (0.826 - 1.019)	0.883 (0.783 - 0.993)	0.791 (0.701 - 0.891)	0.887 (0.813 - 0.966)	0.353
	Arginine	0.736 (0.652 - 0.832)	0.757 (0.659 - 0.869)	0.735 (0.64 - 0.845)	0.67 (0.605 - 0.741)	0.434
	Asparagine	2.999 (2.71 - 3.319)	2.506 (2.234 - 2.812)	2.535 (2.259 - 2.844)	2.529 (2.328 - 2.748)	0.051
	Aspartate	0.506 (0.424 - 0.604)	0.499 (0.408 - 0.611)	0.65 (0.531 - 0.796)	0.518 (0.447 - 0.598)	0.208
	Citrulline	1.377 (1.216 - 1.56)	1.112 (0.964 - 1.279)	1.297 (1.125 - 1.496)	1.191 (1.074 - 1.321)	0.097
	<b>Glutamine</b>	<b>2.173 (1.892 - 2.5)</b>	<b>1.581 (1.349 - 1.854)<sup>b</sup></b>	<b>1.687 (1.439 - 1.977)<sup>b</sup></b>	<b>1.811 (1.614 - 2.032)<sup>b</sup></b>	<b>0.035</b>
	Glutamate	0.321 (0.255 - 0.403)	0.344 (0.265 - 0.446)	0.425 (0.327 - 0.551)	0.348 (0.288 - 0.421)	0.493
	Glycine	1.05 (0.925 - 1.194)	0.973 (0.843 - 1.125)	0.891 (0.771 - 1.033)	0.979 (0.881 - 1.086)	0.503
	<b>Histidine</b>	<b>1.143 (1.069 - 1.222)</b>	<b>1.122 (1.04 - 1.211)</b>	<b>1.054 (0.977 - 1.14)</b>	<b>1.005 (0.948 - 1.062)<sup>b</sup></b>	<b>0.013<sup>*</sup></b>
	<b>Isoleucine</b>	<b>1.099 (0.998 - 1.213)</b>	<b>1.107 (0.991 - 1.239)</b>	<b>1.04 (0.929 - 1.161)</b>	<b>0.935 (0.863 - 1.014)<sup>b</sup></b>	<b>0.027<sup>*</sup></b>

Leucine	1.245 (1.132 - 1.368)	1.236 (1.112 - 1.377)	1.119 (1.007 - 1.247)	1.076 (0.995 - 1.164)	0.053
Lysine	1.067 (1.007 - 1.132)	1.04 (0.973 - 1.112)	0.971 (0.908 - 1.038)	1.002 (0.955 - 1.054)	0.186
Methionine	0.83 (0.735 - 0.94)	0.743 (0.644 - 0.857)	0.719 (0.622 - 0.83)	0.714 (0.644 - 0.791)	0.300
Ornithine	0.953 (0.839 - 1.079)	0.931 (0.807 - 1.074)	1.019 (0.881 - 1.175)	1.026 (0.925 - 1.138)	0.636
Phenylalanine	1.146 (1.069 - 1.23)	1.102 (1.019 - 1.194)	1.033 (0.953 - 1.117)	1.059 (1 - 1.122)	0.218
<b>Proline</b>	<b>0.906 (0.818 - 1.002)</b>	<b>0.927 (0.826 - 1.04)</b>	<b>0.847 (0.753 - 0.951)</b>	<b>0.762 (0.701 - 0.828)<sup>b</sup></b>	<b>0.016<sup>*</sup></b>
Serine	1.028 (0.931 - 1.138)	1.069 (0.953 - 1.197)	0.986 (0.879 - 1.107)	0.902 (0.83 - 0.979)	0.063
Threonine	0.851 (0.771 - 0.94)	0.809 (0.723 - 0.904)	0.791 (0.708 - 0.885)	0.741 (0.684 - 0.805)	0.178
<b>Tryptophan</b>	<b>1.3 (1.172 - 1.445)</b>	<b>1.256 (1.114 - 1.413)</b>	<b>1.072 (0.951 - 1.208)<sup>b</sup></b>	<b>1.089 (0.998 - 1.189)<sup>b</sup></b>	<b>0.020<sup>*</sup></b>
<b>Tyrosine</b>	<b>1.138 (1.03 - 1.259)</b>	<b>1.148 (1.026 - 1.285)</b>	<b>0.944 (0.843 - 1.059)<sup>b</sup></b>	<b>0.889 (0.818 - 0.964)<sup>b</sup></b>	<b>&lt;0.001<sup>*</sup></b>
<b>Valine</b>	<b>1.268 (1.178 - 1.365)</b>	<b>1.271 (1.169 - 1.38)</b>	<b>1.146 (1.052 - 1.245)</b>	<b>1.074 (1.012 - 1.14)<sup>b</sup></b>	<b>0.001<sup>*</sup></b>
Acetylmethionine	1.51 (1.227 - 1.858)	1.253 (0.993 - 1.585)	1.6 (1.262 - 2.028)	1.774 (1.496 - 2.104)	0.122
<b>Asymmetric dimethylarginine</b>	<b>1.439 (1.312 - 1.574)</b>	<b>1.211 (1.091 - 1.34)<sup>b</sup></b>	<b>1.119 (1.012 - 1.242)<sup>b</sup></b>	<b>1.259 (1.169 - 1.358)<sup>b</sup></b>	<b>0.011<sup>*</sup></b>
Alpha-Aminoadipic acid	0.914 (0.811 - 1.03)	0.832 (0.726 - 0.951)	0.793 (0.69 - 0.908)	0.802 (0.726 - 0.883)	0.359
<b>Creatinine</b>	<b>1.183 (1.067 - 1.309)</b>	<b>0.929 (0.828 - 1.045)</b>	<b>0.971 (0.863 - 1.091)</b>	<b>1.069 (0.982 - 1.164)</b>	<b>0.026<sup>*</sup></b>
<b>Kynurenine</b>	<b>1.656 (1.486 - 1.849)</b>	<b>1.365 (1.205 - 1.545)</b>	<b>1.156 (1.021 - 1.309)</b>	<b>1.178 (1.076 - 1.288)</b>	<b>0.000<sup>*</sup></b>
Methioninesulfoxide	0.537 (0.42 - 0.687)	0.637 (0.485 - 0.838)	0.762 (0.579 - 1.005)	0.505 (0.412 - 0.619)	0.121
<b>Putrescine</b>	<b>6.471 (5.534 - 7.586)</b>	<b>4.819 (4.036 - 5.768)<sup>b</sup></b>	<b>5.675 (4.742 - 6.792)</b>	<b>6.855 (6.026 - 7.816)</b>	<b>0.019<sup>*</sup></b>
<b>Spermidine</b>	<b>1.545 (1.288 - 1.854)</b>	<b>1.059 (0.861 - 1.3)<sup>b</sup></b>	<b>1.574 (1.279 - 1.936)</b>	<b>2.183 (1.879 - 2.535)<sup>b</sup></b>	<b>&lt;0.001<sup>*</sup></b>
<b>Spermine</b>	<b>1.186 (1.081 - 1.3)</b>	<b>1.091 (0.984 - 1.213)</b>	<b>1.285 (1.156 - 1.426)</b>	<b>1.327 (1.227 - 1.432)</b>	<b>0.017<sup>*</sup></b>
<b>Trans-4-Hydroxyproline</b>	<b>0.762 (0.655 - 0.887)</b>	<b>0.703 (0.592 - 0.836)</b>	<b>0.705 (0.593 - 0.839)</b>	<b>0.585 (0.516 - 0.664)<sup>b</sup></b>	<b>0.039</b>
Taurine	0.984 (0.857 - 1.127)	0.971 (0.83 - 1.135)	1.208 (1.03 - 1.416)	1.102 (0.984 - 1.236)	0.143

<b>Phosphatidylcholines</b>						
	Lyso PC a C14:0	1.178 (1.089 - 1.271)	1.138 (1.042 - 1.242)	1.089 (0.998 - 1.189)	1.169 (1.096 - 1.245)	0.605
	Lyso PC a C16:0	0.586 (0.525 - 0.655)	0.528 (0.466 - 0.6)	0.495 (0.437 - 0.562)	0.587 (0.536 - 0.644)	0.164
	Lyso PC a C16:1	0.889 (0.778 - 1.014)	0.887 (0.764 - 1.033)	0.796 (0.684 - 0.925)	0.877 (0.785 - 0.979)	0.682
	Lyso PC a C17:0	0.518 (0.455 - 0.589)	0.5 (0.432 - 0.578)	0.499 (0.431 - 0.578)	0.573 (0.515 - 0.638)	0.313
	Lyso PC a C18:0	0.43 (0.38 - 0.486)	0.399 (0.347 - 0.459)	0.351 (0.305 - 0.405)	0.387 (0.349 - 0.429)	0.249
	Lyso PC a C18:1	0.7 (0.615 - 0.798)	0.748 (0.646 - 0.867)	0.716 (0.618 - 0.83)	0.774 (0.695 - 0.861)	0.630
	Lyso PC a C18:2	0.805 (0.695 - 0.931)	0.895 (0.759 - 1.057)	0.841 (0.713 - 0.995)	0.92 (0.815 - 1.038)	0.503
	Lyso PC a C20:3	0.853 (0.75 - 0.971)	0.953 (0.822 - 1.102)	0.815 (0.703 - 0.944)	0.94 (0.843 - 1.045)	0.257
	Lyso PC a C20:4	0.522 (0.455 - 0.6)	0.535 (0.457 - 0.627)	0.512 (0.437 - 0.6)	0.565 (0.504 - 0.634)	0.709
	<b>Lyso PC a C24:0</b>	<b>1.167 (1.064 - 1.276)</b>	<b>1.483 (1.337 - 1.644)<sup>b</sup></b>	<b>1.315 (1.186 - 1.459)</b>	<b>1.213 (1.125 - 1.309)</b>	<b>0.007<sup>*</sup></b>
	<b>Lyso PC a C26:0</b>	<b>1.403 (1.213 - 1.618)</b>	<b>1.995 (1.694 - 2.35)<sup>b</sup></b>	<b>1.884 (1.596 - 2.223)<sup>b</sup></b>	<b>1.603 (1.422 - 1.807)</b>	<b>0.017<sup>*</sup></b>
	Lyso PC a C26:1	1.25 (1.114 - 1.403)	1.493 (1.309 - 1.702)	1.479 (1.294 - 1.687)	1.315 (1.194 - 1.445)	0.180
	<b>Lyso PC a C28:0</b>	<b>1.164 (1.021 - 1.327)</b>	<b>1.549 (1.334 - 1.799)<sup>b</sup></b>	<b>1.384 (1.189 - 1.607)</b>	<b>1.213 (1.089 - 1.352)</b>	<b>0.034</b>
	Lyso PC a C28:1	1.442 (1.282 - 1.622)	1.824 (1.6 - 2.084)	1.762 (1.542 - 2.018)	1.57 (1.426 - 1.73)	0.064
	<b>PC aa C24:0</b>	<b>1.202 (1.047 - 1.38)</b>	<b>1.637 (1.4 - 1.914)<sup>b</sup></b>	<b>1.563 (1.334 - 1.828)<sup>b</sup></b>	<b>1.303 (1.164 - 1.462)</b>	<b>0.024<sup>*</sup></b>
	PC aa C26:0	1.253 (1.151 - 1.368)	1.442 (1.309 - 1.589)	1.435 (1.3 - 1.581)	1.416 (1.321 - 1.521)	0.111
	PC aa C28:1	2.123 (1.919 - 2.355)	2.158 (1.919 - 2.421)	2.148 (1.91 - 2.415)	2.323 (2.133 - 2.529)	0.478
	PC aa C30:0	2.723 (2.393 - 3.097)	2.844 (2.455 - 3.289)	2.667 (2.301 - 3.09)	2.742 (2.466 - 3.048)	0.930
	PC aa C32:0	2.07 (1.888 - 2.27)	2.084 (1.875 - 2.312)	1.972 (1.774 - 2.193)	1.977 (1.832 - 2.133)	0.762
	PC aa C32:1	4.786 (4.036 - 5.675)	5.164 (4.256 - 6.266)	4.467 (3.673 - 5.42)	4.875 (4.227 - 5.61)	0.744

PC aa C32:2	2.559 (2.208 - 2.972)	2.679 (2.265 - 3.17)	2.28 (1.928 - 2.704)	2.698 (2.388 - 3.048)	0.403
PC aa C32:3	1.135 (1.021 - 1.262)	1.318 (1.169 - 1.486)	1.161 (1.03 - 1.312)	1.213 (1.112 - 1.324)	0.265
PC aa C34:1	2.576 (2.328 - 2.844)	2.6 (2.317 - 2.917)	2.466 (2.198 - 2.767)	2.704 (2.483 - 2.938)	0.622
PC aa C34:2	1.758 (1.607 - 1.919)	1.698 (1.538 - 1.879)	1.57 (1.419 - 1.738)	1.766 (1.644 - 1.901)	0.316
PC aa C34:3	2.032 (1.807 - 2.291)	2.228 (1.945 - 2.547)	1.963 (1.714 - 2.244)	2.118 (1.919 - 2.333)	0.526
PC aa C34:4	2.109 (1.803 - 2.466)	2.239 (1.875 - 2.673)	1.945 (1.629 - 2.328)	2.113 (1.858 - 2.404)	0.723
PC aa C36:0	1.517 (1.262 - 1.82)	2.046 (1.663 - 2.523)	1.845 (1.496 - 2.275)	1.462 (1.256 - 1.702)	0.057
PC aa C36:1	2.109 (1.888 - 2.35)	2.218 (1.959 - 2.518)	2.018 (1.782 - 2.291)	1.982 (1.807 - 2.168)	0.475
PC aa C36:2	1.652 (1.507 - 1.816)	1.641 (1.476 - 1.828)	1.459 (1.312 - 1.626)	1.469 (1.361 - 1.589)	0.111
PC aa C36:3	1.795 (1.622 - 1.986)	1.795 (1.6 - 2.018)	1.6 (1.426 - 1.799)	1.675 (1.538 - 1.824)	0.390
PC aa C36:4	1.549 (1.384 - 1.734)	1.483 (1.306 - 1.687)	1.346 (1.183 - 1.528)	1.462 (1.334 - 1.607)	0.495
PC aa C36:5	2.704 (2.244 - 3.266)	3.177 (2.57 - 3.926)	2.582 (2.084 - 3.199)	3.126 (2.679 - 3.648)	0.295
PC aa C36:6	2.286 (1.919 - 2.716)	2.649 (2.173 - 3.228)	2.218 (1.82 - 2.71)	2.421 (2.094 - 2.799)	0.554
<b>PC aa C38:0</b>	<b>1.738 (1.514 - 1.995)</b>	<b>1.963 (1.679 - 2.301)</b>	<b>1.71 (1.459 - 2.004)</b>	<b>1.493 (1.33 - 1.675)</b>	<b>0.040</b>
<b>PC aa C38:1</b>	<b>1.799 (1.535 - 2.113)</b>	<b>2.594 (2.163 - 3.112)<sup>b</sup></b>	<b>2.244 (1.866 - 2.698)</b>	<b>1.862 (1.633 - 2.128)</b>	<b>0.017<sup>*</sup></b>
<b>PC aa C38:3</b>	<b>1.754 (1.57 - 1.959)</b>	<b>1.742 (1.535 - 1.977)</b>	<b>1.445 (1.271 - 1.641)<sup>b</sup></b>	<b>1.432 (1.306 - 1.57)<sup>b</sup></b>	<b>0.008<sup>*</sup></b>
<b>PC aa C38:4</b>	<b>1.33 (1.189 - 1.489)</b>	<b>1.271 (1.117 - 1.442)</b>	<b>1.091 (0.959 - 1.242)<sup>b</sup></b>	<b>1.089 (0.991 - 1.194)<sup>b</sup></b>	<b>0.020<sup>*</sup></b>
PC aa C38:5	1.563 (1.387 - 1.758)	1.563 (1.368 - 1.791)	1.349 (1.178 - 1.545)	1.483 (1.346 - 1.637)	0.378
PC aa C38:6	2.158 (1.854 - 2.512)	1.954 (1.644 - 2.323)	1.795 (1.507 - 2.133)	2.018 (1.778 - 2.291)	0.550
<b>PC aa C40:1</b>	<b>1.183 (1.04 - 1.343)</b>	<b>1.663 (1.439 - 1.923)<sup>b</sup></b>	<b>1.39 (1.202 - 1.611)</b>	<b>1.242 (1.117 - 1.38)</b>	<b>0.005<sup>*</sup></b>
<b>PC aa C40:2</b>	<b>1.012 (0.845 - 1.211)</b>	<b>1.66 (1.355 - 2.032)<sup>b</sup></b>	<b>1.352 (1.102 - 1.66)</b>	<b>1.125 (0.968 - 1.303)</b>	<b>0.005<sup>*</sup></b>
<b>PC aa C40:3</b>	<b>1.159 (0.998 - 1.346)</b>	<b>1.545 (1.306 - 1.832)<sup>b</sup></b>	<b>1.327 (1.119 - 1.578)</b>	<b>1.156 (1.021 - 1.309)</b>	<b>0.044</b>

<b>PC aa C40:4</b>	<b>1.14 (1.016 - 1.276)</b>	<b>1.114 (0.977 - 1.268)</b>	<b>0.979 (0.861 - 1.117)</b>	<b>0.916 (0.834 - 1.007)<sup>b</sup></b>	<b>0.013<sup>*</sup></b>
<b>PC aa C40:5</b>	<b>1.426 (1.265 - 1.611)</b>	<b>1.327 (1.156 - 1.524)</b>	<b>1.119 (0.975 - 1.288)<sup>b</sup></b>	<b>1.175 (1.064 - 1.3)<sup>b</sup></b>	<b>0.034</b>
PC aa C40:6	1.95 (1.675 - 2.27)	1.766 (1.486 - 2.094)	1.517 (1.276 - 1.803)	1.531 (1.352 - 1.734)	0.065
PC aa C42:0	1.265 (1.114 - 1.432)	1.521 (1.321 - 1.754)	1.268 (1.099 - 1.462)	1.227 (1.107 - 1.361)	0.102
<b>PC aa C42:1</b>	<b>1.175 (1.03 - 1.343)</b>	<b>1.552 (1.337 - 1.803)<sup>b</sup></b>	<b>1.256 (1.079 - 1.462)</b>	<b>1.151 (1.03 - 1.282)</b>	<b>0.015<sup>*</sup></b>
<b>PC aa C42:2</b>	<b>1.14 (0.993 - 1.309)</b>	<b>1.603 (1.371 - 1.875)<sup>b</sup></b>	<b>1.334 (1.138 - 1.56)</b>	<b>1.236 (1.104 - 1.387)</b>	<b>0.018<sup>*</sup></b>
PC aa C42:4	0.897 (0.778 - 1.035)	1.156 (0.984 - 1.361)	1 (0.849 - 1.178)	0.885 (0.787 - 0.998)	0.065
PC aa C42:5	1.34 (1.178 - 1.524)	1.429 (1.233 - 1.656)	1.321 (1.138 - 1.531)	1.146 (1.03 - 1.276)	0.072
PC aa C42:6	1.462 (1.297 - 1.644)	1.552 (1.358 - 1.774)	1.4 (1.222 - 1.6)	1.291 (1.172 - 1.426)	0.134
PC ae C30:0	2.014 (1.803 - 2.249)	2.158 (1.905 - 2.443)	2.118 (1.866 - 2.399)	1.986 (1.816 - 2.178)	0.729
PC ae C30:2	1.285 (1.153 - 1.435)	1.626 (1.435 - 1.837)	1.5 (1.321 - 1.698)	1.406 (1.285 - 1.538)	0.066
PC ae C32:1	1.811 (1.652 - 1.986)	1.791 (1.611 - 1.991)	1.726 (1.552 - 1.919)	1.644 (1.521 - 1.774)	0.356
PC ae C32:2	1.592 (1.442 - 1.758)	1.782 (1.592 - 1.995)	1.69 (1.51 - 1.897)	1.6 (1.472 - 1.734)	0.441
PC ae C34:0	2.065 (1.854 - 2.301)	2.109 (1.866 - 2.388)	2.168 (1.914 - 2.455)	2.133 (1.95 - 2.333)	0.951
PC ae C34:1	2.427 (2.213 - 2.667)	2.432 (2.183 - 2.704)	2.399 (2.158 - 2.673)	2.393 (2.218 - 2.588)	0.994
PC ae C34:2	1.626 (1.452 - 1.816)	1.626 (1.435 - 1.845)	1.603 (1.413 - 1.82)	1.641 (1.496 - 1.795)	0.995
PC ae C34:3	1.127 (1 - 1.274)	1.084 (0.944 - 1.245)	1.148 (0.998 - 1.318)	1.074 (0.971 - 1.189)	0.834
PC ae C36:0	1.941 (1.758 - 2.143)	2.234 (2 - 2.5)	2.118 (1.897 - 2.371)	1.972 (1.82 - 2.143)	0.254
PC ae C36:1	1.294 (1.13 - 1.479)	1.57 (1.349 - 1.828)	1.574 (1.349 - 1.832)	1.514 (1.355 - 1.69)	0.208
PC ae C36:2	1.73 (1.542 - 1.936)	1.845 (1.622 - 2.099)	1.811 (1.592 - 2.061)	1.841 (1.675 - 2.023)	0.837
PC ae C36:3	1.5 (1.352 - 1.66)	1.493 (1.33 - 1.679)	1.419 (1.262 - 1.596)	1.393 (1.279 - 1.517)	0.648
<b>PC ae C36:4</b>	<b>1.472 (1.315 - 1.652)</b>	<b>1.413 (1.242 - 1.607)</b>	<b>1.276 (1.122 - 1.452)</b>	<b>1.211 (1.102 - 1.33)<sup>b</sup></b>	<b>0.039</b>

	PC ae C36:5	1.213 (1.079 - 1.365)	1.164 (1.019 - 1.33)	1.112 (0.973 - 1.274)	1.091 (0.991 - 1.202)	0.544
	PC ae C38:0	1.466 (1.282 - 1.675)	1.702 (1.462 - 1.982)	1.5 (1.285 - 1.746)	1.549 (1.387 - 1.73)	0.489
	<b>PC ae C38:2</b>	<b>0.813 (0.687 - 0.962)</b>	<b>1.183 (0.977 - 1.432)<sup>b</sup></b>	<b>1.05 (0.865 - 1.274)</b>	<b>0.869 (0.757 - 1)</b>	<b>0.026<sup>*</sup></b>
	PC ae C38:3	0.659 (0.574 - 0.757)	0.863 (0.738 - 1.009)	0.782 (0.667 - 0.916)	0.701 (0.627 - 0.787)	0.089
	PC ae C38:4	1.368 (1.242 - 1.507)	1.343 (1.202 - 1.496)	1.271 (1.138 - 1.419)	1.242 (1.146 - 1.346)	0.406
	PC ae C38:5	1.413 (1.276 - 1.567)	1.327 (1.183 - 1.493)	1.216 (1.081 - 1.368)	1.186 (1.091 - 1.291)	0.053
	PC ae C38:6	1.549 (1.365 - 1.758)	1.469 (1.274 - 1.698)	1.346 (1.164 - 1.552)	1.346 (1.213 - 1.496)	0.320
	PC ae C40:1	1.403 (1.23 - 1.596)	1.774 (1.531 - 2.056)	1.585 (1.368 - 1.841)	1.517 (1.361 - 1.69)	0.159
	PC ae C40:2	1.239 (1.096 - 1.403)	1.56 (1.355 - 1.791)	1.416 (1.23 - 1.629)	1.318 (1.189 - 1.459)	0.124
	<b>PC ae C40:3</b>	<b>0.305 (0.259 - 0.358)</b>	<b>0.454 (0.378 - 0.546)<sup>b</sup></b>	<b>0.391 (0.325 - 0.471)</b>	<b>0.335 (0.293 - 0.383)</b>	<b>0.016<sup>*</sup></b>
	PC ae C40:4	0.711 (0.635 - 0.796)	0.861 (0.757 - 0.979)	0.773 (0.679 - 0.881)	0.724 (0.659 - 0.796)	0.141
	PC ae C40:5	0.735 (0.662 - 0.817)	0.861 (0.764 - 0.971)	0.791 (0.7 - 0.891)	0.748 (0.685 - 0.817)	0.241
	PC ae C40:6	1.549 (1.377 - 1.742)	1.51 (1.321 - 1.726)	1.419 (1.242 - 1.626)	1.435 (1.303 - 1.585)	0.720
	PC ae C42:0	1.175 (1.096 - 1.259)	1.312 (1.213 - 1.419)	1.225 (1.132 - 1.327)	1.164 (1.099 - 1.233)	0.108
	<b>PC ae C42:1</b>	<b>0.971 (0.849 - 1.112)</b>	<b>1.368 (1.172 - 1.592)<sup>b</sup></b>	<b>1.169 (1.002 - 1.365)</b>	<b>0.973 (0.869 - 1.086)</b>	<b>0.003<sup>*</sup></b>
	<b>PC ae C42:2</b>	<b>1.426 (1.256 - 1.614)</b>	<b>1.875 (1.626 - 2.163)<sup>b</sup></b>	<b>1.633 (1.413 - 1.884)</b>	<b>1.496 (1.346 - 1.66)</b>	<b>0.039</b>
	PC ae C42:3	1.222 (1.079 - 1.38)	1.538 (1.337 - 1.766)	1.38 (1.199 - 1.589)	1.315 (1.189 - 1.455)	0.133
	PC ae C42:4	0.897 (0.804 - 1.005)	1.016 (0.895 - 1.153)	0.912 (0.804 - 1.038)	0.925 (0.843 - 1.014)	0.493
	PC ae C42:5	0.889 (0.813 - 0.971)	0.957 (0.865 - 1.059)	0.883 (0.798 - 0.977)	0.865 (0.804 - 0.931)	0.434
	<b>PC ae C44:3</b>	<b>0.995 (0.873 - 1.132)</b>	<b>1.413 (1.219 - 1.637)<sup>b</sup></b>	<b>1.18 (1.016 - 1.371)</b>	<b>1.086 (0.975 - 1.211)</b>	<b>0.008<sup>*</sup></b>
	PC ae C44:4	1.614 (1.459 - 1.786)	1.714 (1.528 - 1.923)	1.556 (1.387 - 1.746)	1.517 (1.396 - 1.648)	0.356
	PC ae C44:5	1.791 (1.607 - 2)	1.637 (1.445 - 1.854)	1.542 (1.358 - 1.746)	1.581 (1.442 - 1.73)	0.293



	PC ac C44:6	1.109 (0.989 - 1.242)	1.135 (0.995 - 1.291)	0.991 (0.869 - 1.127)	1.04 (0.946 - 1.143)	0.404
<b>Sphingomyelins</b>						
	SM (OH) C14:1	1.786 (1.611 - 1.986)	1.75 (1.552 - 1.972)	1.782 (1.581 - 2.009)	1.95 (1.786 - 2.123)	0.386
	SM (OH) C16:1	1.462 (1.324 - 1.614)	1.51 (1.349 - 1.687)	1.486 (1.327 - 1.663)	1.622 (1.493 - 1.762)	0.337
	SM (OH) C22:1	1.419 (1.282 - 1.567)	1.4 (1.25 - 1.567)	1.334 (1.189 - 1.493)	1.403 (1.291 - 1.521)	0.879
	SM (OH) C22:2	1.849 (1.671 - 2.042)	1.82 (1.626 - 2.037)	1.824 (1.626 - 2.042)	1.832 (1.687 - 1.991)	0.997
	SM (OH) C24:1	1.406 (1.282 - 1.545)	1.361 (1.225 - 1.514)	1.288 (1.159 - 1.432)	1.271 (1.178 - 1.374)	0.355
	SM C16:0	1.422 (1.315 - 1.538)	1.462 (1.34 - 1.6)	1.39 (1.271 - 1.521)	1.455 (1.365 - 1.552)	0.786
	SM C16:1	1.545 (1.419 - 1.683)	1.57 (1.422 - 1.73)	1.439 (1.303 - 1.589)	1.6 (1.489 - 1.718)	0.366
	SM C18:0	1.4 (1.274 - 1.538)	1.517 (1.365 - 1.69)	1.368 (1.227 - 1.524)	1.51 (1.396 - 1.633)	0.288
	SM C18:1	1.285 (1.161 - 1.422)	1.409 (1.256 - 1.581)	1.236 (1.102 - 1.39)	1.409 (1.294 - 1.531)	0.162
	SM C20:2	1.052 (0.944 - 1.172)	1.091 (0.966 - 1.236)	1.005 (0.887 - 1.135)	0.979 (0.895 - 1.072)	0.480
	SM C24:0	1.312 (1.197 - 1.439)	1.337 (1.202 - 1.486)	1.23 (1.107 - 1.368)	1.259 (1.167 - 1.361)	0.635
	SM C24:1	1.663 (1.531 - 1.807)	1.683 (1.531 - 1.849)	1.622 (1.476 - 1.786)	1.581 (1.476 - 1.694)	0.667
	SM C26:0	1.265 (1.109 - 1.439)	1.067 (0.914 - 1.242)	1.084 (0.933 - 1.262)	1.18 (1.057 - 1.318)	0.386
	SM C26:1	1.694 (1.524 - 1.884)	1.758 (1.556 - 1.986)	1.687 (1.496 - 1.905)	1.581 (1.449 - 1.73)	0.514
<b>Hexoses</b>						
	Sum of hexoses	1.189 (1.067 - 1.321)	1.164 (1.033 - 1.315)	1.094 (0.968 - 1.236)	1.114 (1.019 - 1.216)	0.713

The table reports the estimated marginal means of normalized concentrations obtained after adjustment for age in the ANCOVA model. Data are expressed as mean and 95% confidence interval in parentheses. Significant differences are highlighted in bold. PC: Phosphatidylcholine. aa: diacyl. ae: acyl/alkyl. SM: Sphingomyelin.

<sup>a</sup> ANCOVA including age in the model.

\* Significant at false discovery rate  $\alpha=0.1$  after applying Benjamini-Hochberg procedure.

Simple contrasts applied to ANCOVA:

<sup>b</sup>:  $P<0.05$  vs. controls.